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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,041	06/23/2004	Masaki Okamura	77792/44	5200

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EXAMINER

COLON SANTANA, EDUARDO

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/500,041	Applicant(s) OKAMURA ET AL.	
	Examiner Eduardo Colon Santana	Art Unit 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-9,11,12,14,16-24,26 and 28-37 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-5,7,8,12,14,16-22,24,26,28,29,31-34,36 and 37 is/are allowed.
- 6) ☒ Claim(s) 9,23,30 and 35 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/23/2004</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Detail Action</u> . |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 6/23/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Voltage converter control apparatus and method".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 9, 23, 30 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Jun et al. JP Document-Identifier No. 09073328 A.

Referring to claim 9, Jun et al. discloses a solar light power generation controller, which uses a voltage conversion device (DC/DC converter) (see all figures and respective portions of the specification). Jun et al. further depicts in figures 1, 5 and 6, a DC/DC converter (4, 24) having a reactor (4a, 24a) for temporarily storing energy based on a current discharged from a power source (1-3, 21-23), which also is chargeable, for converting a voltage of the power source into a desired voltage through switching of a switching element (4d, 24d). Furthermore, Jun et al. depicts from figures (1, 5, and 6) a voltage detection circuit (7, 28); a control circuit (6, 26) for applying switching control to the switching element (4d, 24d) so that the detected voltage remains within a predetermined range (see par. 0012-0016) and supplied to a load (5, 25).

As to claims 23, 30 and 35, the method steps or computer program are inherent in the product structure of claim 9 above. Further discussion is omitted.

Allowable Subject Matter

5. Claims 1, 3-5, 7, 8, 12, 14, 16-22, 24, 26, 28, 29, 31-34, 36 and 37 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: In view of the limitations presented in the claims allowed, the prior art does not disclose or teach alone or in combination a voltage conversion device, wherein a condition detecting circuit detects an electromotive voltage and inner resistance of the power source as a condition of the power source, to thereby have a

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control circuit set a current range based on the output characteristic of the power source corresponding to the detected condition and applying switching control to a switching element such that the current of the power source remains within that range. In other embodiments of additional claims the control circuit sets and controls a ratio range based on a range of ratios between a period of switching elements remaining in a ON state so as to remain within the set ratio range. Moreover, the prior art does not disclose a control circuit limiting a ratio between periods of a first and second switching elements remaining in an ON state, based on permissible current capacities of the first and second switching element by controlling such a proportion of a period with either of the switching elements remaining in the ON state equalizing to or being smaller than $(V_{bo} - R_b \times I_{b_{max}}) V_c$, wherein V_{bo} is the output voltage of the power source, R_b represents the inner resistance of the power source, $I_{b_{max}}$ represents the permissible current capacity of the switching element and V_c is the output voltage.

7. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record in form 892 and not specifically relied upon is considered relevant to applicant's disclosure to further show the general state of the art.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Colon Santana whose telephone number is (571) 272-2060. The examiner can normally be reached on Monday thru Thursday 6:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Martin can be reached on (571) 272-2800 X.37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ECS
January 5, 2006



Eduardo Colon Santana
Examiner
Art Unit 2837



MARLON T. FLETCHER
PRIMARY EXAMINER